

NOTES ON THE NATIVE FLORA OF NEW SOUTH  
WALES.

PART X. THE FEDERAL CAPITAL TERRITORY.

BY R. H. CAMBAGE, F.L.S.

(Plates lxxi.-lxxiv.)

(Continued from *These Proceedings*, 1912, p.651.)

SYNOPSIS.

	PAGE
Area and Situation ... ..	673
Early Explorers in the Locality ... ..	673
Elevation and Topography ... ..	679
Geological Formations ... ..	680
Climate and Rainfall ... ..	682
Absence of Trees from Canberra Plains ... ..	684
Insect-Action on Twigs and Buds ... ..	688
Plants absent from the Federal Territory ... ..	688
General Remarks on Various Species ... ..	689
List of Plants ... ..	701
Comparison with Tasmania ... ..	709

AREA AND SITUATION.

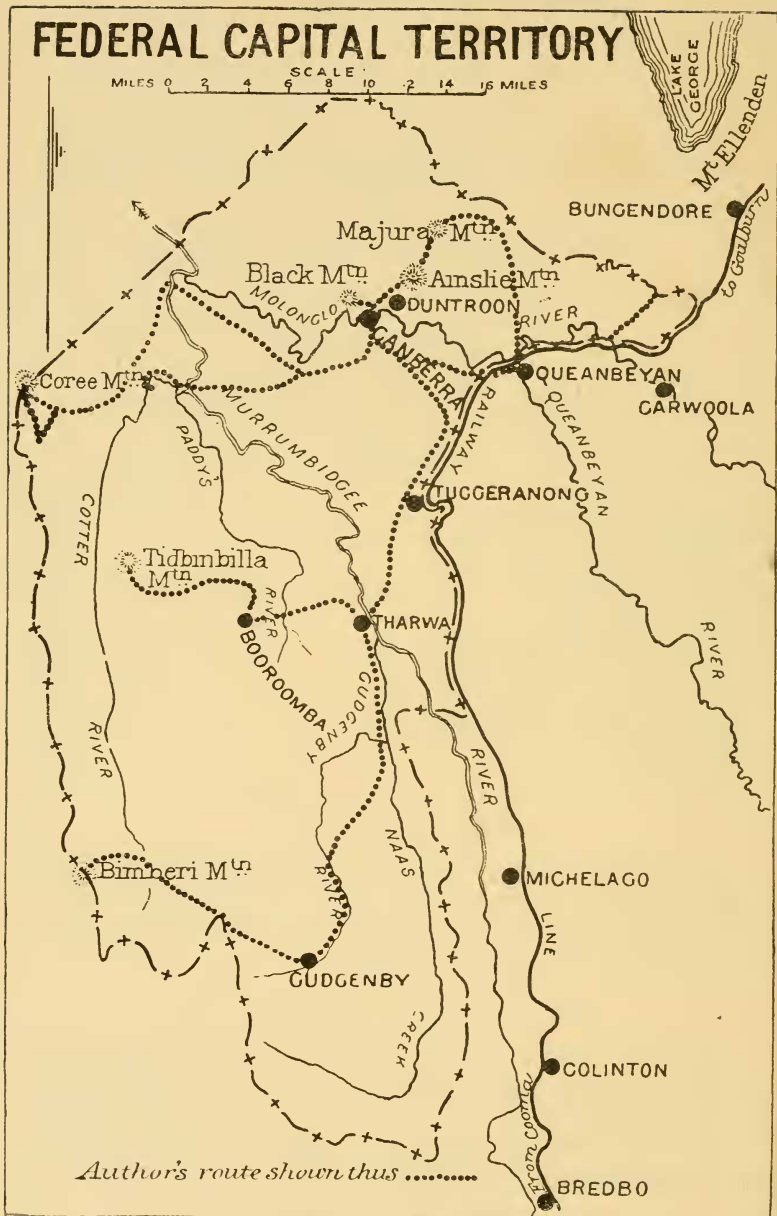
The Federal Capital Territory contains an area of about 900 square miles, and is situated between latitude 35° and 36° south. Its greatest length north and south is upwards of 50 miles, while its average width is under 20 miles.

EARLY EXPLORERS IN THE LOCALITY.

The first explorer to reach the Federal Capital Territory was Charles Throsby, of Bong Bong and Glenfield, and he was probably accompanied by Joseph Wild, a constable of the district of Argyle, and a notable bushman, who discovered Lake George, not many miles distant, on 19th August, 1820.

# FEDERAL CAPITAL TERRITORY

SCALE  
MILES 0 2 4 6 8 10 12 14 16 MILES



*Author's route shown thus .....*

In October, 1820, Lake George was visited by Governor Macquarie, who then named it after His Majesty George IV. He also named Goulburn Plains during the same visit. The Governor arrived at Lake Bathurst, from Parramatta, with Deputy Surveyor-General James Meehan, Charles Throsby, Joseph Wild and others, and was there joined by Commissioner Bigge, Surveyor-General John Oxley, and Charles Fraser (Colonial Botanist), who had journeyed from Bathurst up Campbell's River and across the Abercrombie River.\* The party travelled to Lake George from Lake Bathurst, which latter was discovered by James Meehan and Hamilton Hume on 3rd April, 1818 (Field Book 143, Lands Department).

On 28th October, 1820, the Governor and party ascended a high hill to the eastward of Lake George, evidently Ellenden, and viewed the high land in the southern portion of the Capital Territory, though, owing to an intervening range, they would not have been able to see the plains at the northern end. That they were not impressed with the potentialities of the future Federal Territory is evident from the following entry made by Oxley:—"The whole extent between the S.E. and West may be properly described as rocky, broken, and mountainous, and no feature or object in the prospect offered any reasonable expectation that a good or even tolerable country could have existence in those quarters." How little could they foresee that they were gazing over what was to become, not only the spot where William James Farrer was to carry out his great wheat-growing experiments, which would do so much towards producing drought-resisting wheats, and revolutionise wheat-production in a dry climate, but that they were also viewing portion of the site of the future capital of all Australia.

Macquarie refers to "a new-discovered river," and mentions that "Mr. Throsby tried to get hold of some of the natives of this part of the country to serve as guides to conduct them to the new River Murrumbidgee," but the Governor's party could

---

\* See Governor Macquarie's Journal—Report by Commissioner of Inquiry Bigge (Mitchell Library). Oxley's Field Book No. 172, Lands Department.

not find time to visit it, though Throsby did. They were under the impression that the new river flowed towards the south-east into the ocean, which suggests that, although they were aware of the presence of the river, no white man had actually visited it.

It was in April, 1821, that Throsby visited the locality of the present Federal Territory, and, after going southerly from Lake George, he wrote :—" I passed over two rivers, exclusive of the one I discovered and on the banks of which I passed a night at the time the Governor was at Lake George."

The two rivers referred to would be the Molonglo and Queanbeyan, and the one he discovered previously, the Murrumbidgee. He met with vast quantities of limestone, and a good quantity of open forest and plains.\*

On the 31st May, 1823, Captain Mark John Currie, Brigade-Major Ovens, and Joseph Wild reached the vicinity of what is now known as Queanbeyan, and, Currie writes, "encamped by the side of the South Fish River (as called by our attendant, Joseph Wild), on the edge of Lime-stone Plains." They travelled thence south-westerly towards the Morumbidgee (as it was usually spelt in those days), and named the Isabella Plain after Governor Brisbane's daughter. This plain is largely included within Portions 190 and 203, Parish of Tuggeranong. They followed up the right bank of the Morumbidgee, finally crossing the Umaralla, thinking it was the Morumbidgee, and discovering the Monaro Plains or Downs. On the way up, they mention having seen pine-trees of about 2 feet in diameter. These would be the species now known as *Callitris calcarata*, Black or Mountain-Pine.

In returning, the party for some distance kept to the eastward of the Federal Territory, and, on the 8th June, 1823, "met with large rocks of limestone," discovering what is now known as London Bridge, "a natural bridge of one perfect Saxon arch, under which the water passed."

Settlement followed this visit within the next few months, for among the records of the Chief Secretary's Department is a letter

---

\* The Australian Magazine, 1821, Vol. i. (Public Library).

from Joshua John Moore, a retired Lieutenant, dated 16th December, 1826, in which he expresses his desire to proceed with the purchase of 1000 acres, "situated at Canberry, on the east bank of the river, which waters Limestone Plains, above its junction with the Murrumbidgee." He mentions that he had been in possession of the land for upwards of three years. This appears to be the first reference, in an official document, to the name, which, with a slight alteration, was to be selected for the capital city of Australia.

In a letter dated 14th September, 1831, Moore says:—"It is called and known by the name of Canburry, and is bounded on the south by the Molongoo River, and on the west by Canburry Creek."

This area is now Portion 52, Parish Canberra, County Murray, and permission to purchase was granted by Sir Thomas Brisbane on 3rd May, 1825. There seems no doubt that the original was a native name, but its meaning is unknown.

What is now Portion 58, of 4000 acres, Parish Canberra, and known as Duntroon, was promised by Sir Thomas Brisbane on the 18th May, 1825, and Portion 181, of 1000 acres, by Lieutenant General Darling on the 22nd March, 1830, to Robert Campbell, pursuant to instructions from the Right Honorable Secretary of State for the Colonies, in part compensation for the loss of a certain ship called "The Sydney" while employed by the Government of the said territory in the year 1806.

Portion 51, of 640 acres, Parish Canberra, was promised to John McPherson on or before the 10th September, 1831, as a Primary Grant. The name of the farm was Spring Bank, and it was stated to be at Canbury, Limestone Plains.

An area of 2560 acres, said to be at Yarralumla, now Portion 4, Parish Narrabundah, was promised by Governor Darling to Edward Weston, of Horsely, Liverpool, on or before the 5th September, 1831.

An area of 2560 acres, said to be at Yarralumla, now Portion 5, Parish Narrabundah, was promised to Henry Donnison on or before the 15th August, 1828, by Governor Darling, but finally granted to Terence Aubrey Murray and Thomas Walker.

Portion 203, of 2000 acres, Parish Tuggeranong, at Isabella Plain, was promised to Peter Murdock on or before the 14th February, 1827; and Portion 190, of 2560 acres, adjoining, to John McLaren, on or before the 21st February, 1829.

In May, 1829, Surveyor Robert Dixon traversed the Molonglo River from near Queanbeyan, across the "Limestone Plains to the Morumbidgee River." (Field-Book 317, Lands Department).

The position of the junction of the Queanbeyan and Molonglo Rivers is shown, and on one side of the former is written "Medora Creek," and on the other "Quinbean."

The position of "Tim Beards' Station" is shown on the south side of Molonglo River near "commencement of plains."

To the west of where Canberra Church now stands, Dixon shows the position of a fence, and the initials J.J.M., which latter evidently refer to Joshua John Moore, the first owner of of Portion 52, Parish of Canberra.

The entry, "Taylor's Hut," appears near the junction of Yarrolunla Creek and Molonglo River.

On the 15th May, 1832, Surveyor Robert Huddle commenced a survey at "Malonglo River for the purpose of measuring land at Limestone Plains." (Field Book, No.375). Portions were measured for Robert Campbell, George Thomas Palmer, Joshua John Moore, John McPherson, John Stephen, and Edward Weston.

He refers to Majoura, Ainslie's Hill, Black Mountain, Queen-beam, Pialligo, and R. Campbell's Cattle Station on Portion 181.

On the 16th May, 1832, when measuring J. J. Moore's Portion 52, of 1000 acres, Huddle noted, on page 50, the position of several "huts" and some "limestone rocks" at a bend in the river at the spot since named Acton,\* and, near them, entered the name Canburry, which he afterwards altered to Canberry, the latter name appearing on his plan. The site near the huts is now occupied by an old stone cottage, built in the early days

---

\* These identical limestone rocks are shown on the extreme left in photograph No.1, in the "Report on a Geological Reconnaissance of the Federal Territory" by D. J. Mahony, M.Sc., &c., and T. Griffith Taylor, B.Sc., &c. (1913).

of settlement. On the same day, he traversed the creek which flows south-westerly past the eastern slopes of Black Mountain, and, on pages 52 and 53 of his field-book, entered the name as Canbury Creek.\*

#### ELEVATION AND TOPOGRAPHY.†

The elevation of the Federal Capital Territory above sea-level ranges from something under 2,000 feet along the valleys in the northern portion, including part of the proposed Federal City of Canberra, to upwards of 6,000 feet in the south-western portion, the highest point being Mount Bimberi, which reaches an elevation of 6,264 feet, giving the Territory a range of elevation exceeding 4,000 feet.

The western boundary follows a range northerly from Mount Bimberi to Mount Coree or Pabral, the elevation of the latter being 4,657 feet. Dividing the Cotter from the Murrumbidgee River is another range running north and south, one of the highest points of which is Tidbinbilla, said to be a slightly altered native name which signified a snow-capped mountain, and which reaches an elevation of 5,115 feet. These high points are all visible from many spots on the north side of the Molonglo River.

The area east of the Murrumbidgee, which is regarded as a fault-block, is generally lower than that on the western side, and ranges between about 2,000 and 2,800 feet above sea-level, the vegetation being of an open forest character. Around the Federal City site and Duntroon are the Canberra Plains, formerly known as the Limestone Plains, naturally almost treeless, and through which the small Molonglo River flows.

The southern portion of the Territory is largely composed of a network of broken mountains, though, in a few places, as near

---

\* In 1837, Surveyor Hoddle had charge of the laying-out of the City of Melbourne, and in 1851 became the first Surveyor-General of Victoria.

† See "Notes on the Physiography of the Southern Tableland of New South Wales," by C. A. Süßmilch, F.G.S., Journ. Proc. Roy. Soc. N. S. Wales, Vol. xliii., p.331 (1909). Also "The Physiography of the Proposed Federal Territory at Canberra," Commonwealth Bureau of Meteorology, Melbourne, by Griffith Taylor, B.Sc. (1910).

Gudgenby, there are fairly level interspaces showing little or no dissection, and in some cases containing swampy areas.

If we block out a model in the form of a great irregular wedge, and consider the Molonglo River as the northern edge of the wedge, a horizontal section the full width of the Territory and extending south to the southern boundary would give us the length of the wedge, the length of the base would be the width of the Territory in the south, while the width (depth in this case) of the base would vary from perhaps 3,000 to about 4,300 feet in the south-west corner. In viewing this great irregular so-called wedge, which is higher along the western side, we find it is scored longitudinally into more or less deep ravines, along which flow the Cotter, Paddy's, Gudgenby, and Murrumbidgee Rivers. The deepest of these gorges is occupied by the Cotter River, which at Thomas Oldfield's (Portion 2, Parish Fergus, County Cowley) is roughly 3,600 feet above sea-level, so that the river has here, under Mount Bimberi, entrenched itself to a depth of nearly 2,700 feet. The Murrumbidgee occupies the shallowest of these channels, and, in parts of its upper portion, around Tharwa, flows at the eastern foot of the mountains through an almost mature valley, so far as the eastern side is concerned, while it has cut gorges of varying depths down stream.

#### GEOLOGICAL FORMATIONS.\*

Quoting from Mr. Pittman's map, it may be said that the rocks within the Federal City Site consist of Upper Silurian sandstones, quartzites, shales, tuffs, clay-slates, and several outcrops of limestone, while the igneous rocks are crystalline tuffs and lavas, quartz-porphyrries, and quartz-felsites.

In the western and southern portions of the Federal Territory, a considerable area is composed of granite of a fairly siliceous character. Granite rocks are common around Tharwa, Boo-

---

\* See a detailed "Geological Survey of the Site of the Federal Capital of Australia," by Edward F. Pittman, A.R.S.M. (1910). Also, a "Report on a Geological Reconnaissance of the Federal Territory," by D. J. Mahony, M.Sc., &c., and T. Griffith Taylor, B.Sc., &c. (1913).



roomba, the Gudgenby River, in places alternating with slate, on the range separating the Upper Gudgenby waters from those of the Cotter, and on the summit of Bimberi Peak or Mountain.

No evidence of glaciation was noticed on Bimberi, but it was not specially searched for. The absence of a suitable gathering ground, however, would alone probably be sufficient to account for its absence.

The valley of the Cotter, in the vicinity of Bimberi, and the side of Bimberi, up to at least the 5,000 feet level, are of slate formation, probably Upper Silurian, and this accounts for the great denudation which has been effected by the Cotter River operating on the softer rocks, for it was noticed that the highest hills in the locality are granite.

The summit of Tidbinbilla was found to consist of quartzite and slate, the former supplying the resisting qualities.

The central-eastern portion of the Territory consists largely of quartz-porphyrries, and produces an open forest vegetation.

Mount Coree is composed of igneous rocks, a specimen from the summit being considered by Mr. G. W. Card, A.R.S.M., without critical examination, as of the rhyolite or rhyolite-tuff class. This rock splinters in a remarkable manner, and under the bluff at the south-west end, narrow strips may be seen up to 10 feet long.

A few miles south of Coree, and also where the main road crosses Coree Creek, the formation is slate.

A good example of the effect of geological formations on the vegetation may be seen from the City site. To the north east are the slopes of Mount Ainslie (2,762 feet), composed largely of volcanic tuffs, and clothed with open forest, while to the north-west is the coarse sandstone-hill known as Black Mountain (2,658 feet). The name of the latter was suggested by the dark appearance of the more dense foliage of this hill as compared with that on the surrounding elevations, but this mass of vegetation is a direct response to the more siliceous sandstones of which the eminence is composed.

## CLIMATE AND RAINFALL.\*

If the flora of the area be classified under the heading of either a warm- or a cool-country flora, its proper place is certainly under the latter. There are a few western or warmth-loving plants found there, one in particular (*Casuarina Luehmanni*) raising an interesting point in the study of distribution, but the great bulk of them are such as may be expected in our cool mountain-areas. Judging from the native vegetation, therefore, the climate of the Federal Capital Territory may be designated as cool.

According to the Commonwealth Bulletin No.7, and further information kindly supplied by Mr. H. A. Hunt, Commonwealth Meteorologist, and Mr. D. J. Mares, Divisional Officer, Sydney, the following are the mean temperatures at a few stations, and the average annual rainfalls at some localities in and around the Federal Territory, including, for comparison, Cootamundra towards the foot of the western slopes, and Milton to the east on the coast.

	Wettest month.	Driest month.	Years.	Rainfall in inches.	Years.	Mean temp.
Braidwood ...	January	September	39	27·3	—	55·4
Bungendore ...	January	May	27	23·0	—	—
Carwoola ...	June	February	27	24·9	—	—
Collector ...	—	—	17	26·4	—	—
Cooma ...	February	August	52	19·1	44	54·2
Cootamundra ...	June	February	28	22·9	16	59·6
Duntroon ...	June	February	19	20·1	4	56·6
Goulburn ...	January	April	52	25·0	46	56·1
Gudgenby ...	January	February	27	31·8	—	—
Gundaroo ...	June	February	40	24·2	—	—
Kiandra ...	June	February	42	63·8	—	44·4
Lake George ...	June	February	33	26·4	19	58·1
Majura ...	January	February	30	24·1	—	—
Milton ...	—	—	25	44·2	—	—
Queanbeyan ...	January	August	46	22·3	—	56·1
Uriarra ...	—	—	15	32·9	—	—

From the above, it may be seen that January and June are

\* See Bulletin No.7, "On the Climate of the Yass-Canberra District," by H. A. Hunt, Commonwealth Meteorologist. (1910).

the wettest months, while February is usually the driest. The annual rainfall at the Capital City site may be estimated at somewhere about 21 or 22 inches.

The effect of climate upon the native vegetation is largely regulated by the question of aspect. Broadly speaking, Eastern New South Wales has two dominating aspects, the eastern or moist, and the western or dry.

The rain comes chiefly from the eastern or ocean-side, and is precipitated by the cooling or ascending clouds on the mountain-sides and summits; when the clouds pass beyond the summits and commence to descend, the precipitation is reduced. This applies also to clouds coming from the west. The result of this natural law may be seen in the Braidwood district, about 40 miles nearer the coast than Canberra, and at a distance of only 35 miles from the ocean, for Braidwood is largely shut off from full coastal influence by a mountain-range a dozen miles away and known as Budawang, to the east of which the rainfall is quite 40 inches, while at Braidwood it is only about 27 inches. Similar conditions are found at many places towards the eastern edge of the plateau in this State.

A great portion of the Capital Territory, especially along the depressed Murrumbidgee valley, is sheltered by north and south ranges on either side, as well as for the most part on the south, the result being that, to a large extent, it is the descending clouds from east, west, and south which pass over this area, and the rainfall in the valley is, in consequence, less than on the hill-sides. Evidence of this may be seen in the resultant flora. Moreover, the clouds from the coast, after passing over the Territory, encounter the high range known in part as Brindabella Mountain, forming the western boundary extending from Bimberi to Coree, and on its slopes deposit much of their load. As a result, this is the area in which is found the most robust and comparatively luxuriant vegetation in the Capital Territory, including splendid examples of tree-ferns (*Dicksonia antarctica*), ten feet high, which, at about 3,000 feet above sea-level, are nestling under the shelter of Mount Coree, and facing the eastern or moist aspect.

My view is that the luxuriant forests on the mountain-side are the result of a high rainfall induced chiefly by the position of such mountains, rather than that the rainfall is a consequence of the presence of the forest. Judging by the vegetation on the higher land towards Bimberi and Coree, it is probable the annual rainfall there reaches 40 inches, and on Bimberi itself, which intercepts clouds from every direction, it possibly amounts to quite 50 inches

#### ABSENCE OF TREES FROM CANBERRA PLAINS.

The reason why many thousands of acres of almost level or slightly undulating land should be naturally destitute of trees is difficult to explain. The question is a universal one, and Australian examples have been much discussed between botanists. The instances are many, and include those from the extensive plains of the interior with a meagre rainfall, where treeless stretches of upwards of fifty miles are not uncommon, to those on the highlands with a rainfall, in exposed situations, as around Kiandra, of sixty inches per annum, and also such spots as those on the upper Dorrigo, where the brush or jungle in places ceases abruptly and forms a fringe on the edge of an open plain.

My own observations lead me to suggest that the explanation will yet be found in many cases by an examination of the soil, or, in other words, that it is from this source that we shall obtain our best knowledge of the subject, studied in relation to topography, rainfall, and aspect. Whether the feature is chiefly regulated by the chemical constituents or the physical properties of the soil is difficult to decide, but it is probably in some degree the result of both factors.

In These Proceedings (1909, p.310), I discussed the question of the absence of trees from the Monaro Tableland, and pointed out that, where the hills were composed of siliceous formations, they were more or less tree-clad, while those made up of basic soils were bare, except for some scattered trees of *Eucalyptus coriacea* and *Acacia melanoxylon* on a few basalt-summits.

I am indebted to Mr. J. C. H. Mingaye, F.C.S, for the following analyses of soils and quartz-porphry from the Canberra Plains.

A. From crest of low, treeless elevation at  $6\frac{1}{4}$  miles from Queanbeyan.

*Mechanical Analysis.*

Coarse particles of stone	...	...	...	19.58 per cent.
Stone left on 20-mesh sieve	...	...	...	9.87 ,,
Stone left on 30-mesh sieve	...	...	...	3.92 ,,
Stone left on 60-mesh sieve	...	...	...	7.83 ,,
Root-fibre	...	...	...	0.59 ,,

Chemical composition of soil passing through 60-mesh sieve soluble in warm hydrochloric acid :—

Insoluble in acid	...	...	...	82.04%*
† Ferric oxide alumina	...	...	...	10.56%
Lime (CaO)	...	...	...	0.06%
Silica (SiO <sub>2</sub> )	...	...	...	0.25%
Magnesia (MgO)	...	...	...	0.16%
Potash (K <sub>2</sub> O)	...	...	...	0.34%
Soda (Na <sub>2</sub> O)	...	...	...	0.13%
Phosphoric anhydride (P <sub>2</sub> O <sub>5</sub> )	...	...	...	0.095%
Manganous oxide (MnO)	...	...	...	trace
Water	...	...	...	5.70%
Organic matter	...	...	...	0.81%
				100.145

\* Containing silica 78.21%.

† Including a small amount of Titanium dioxide (Ti<sub>2</sub>O<sub>3</sub>).

B. From shallow valley at 5 miles from Queanbeyan.

*Mechanical Analysis.*

Coarse particles of stone	...	...	...	0.11 per cent.
Stone left on 20-mesh sieve	...	...	...	3.07 ,,
Stone left on 30-mesh sieve	...	...	...	nil
Stone left on 60-mesh sieve	...	...	...	9.38 ,,

Chemical composition of soil passing through 60-mesh sieve soluble in warm hydrochloric acid :—

Insoluble in acid	...	...	...	89·11%*
† Ferric oxide alumina	...	...	...	5·13%
Silica (SiO <sub>2</sub> )	...	...	...	0·12%
Lime (CaO)	...	...	...	0·61%
Magnesia (MgO)	..	...	...	0·29%
Potash (K <sub>2</sub> O)	...	...	...	0·88%
Soda (Na <sub>2</sub> O)	...	...	...	0·13%
Phosphoric anhydride (P <sub>2</sub> O <sub>5</sub> )	...	...	...	0·07%
Manganous oxide (MnO)	...	...	...	trace
Water	...	...	...	3·38%
Organic matter	...	...	...	0·51%
				100·23

\* Containing silica 76·62%.

† Including a small amount of titanium dioxide (Ti<sub>2</sub>O<sub>3</sub>).

The major portion of the soil which passed through a 60-mesh sieve, and used for the analysis, consists of fine particles of broken-up stone

No. 2124/18. Quartz-porphry, Canberra Road, on treeless plain 2½ miles from Queanbeyan.

*Chemical Composition.*

Moisture at 100°C	...	0·52	Soda (Na <sub>2</sub> O)	...	...	1·37
Water above 100°C	...	2·66	Potash (K <sub>2</sub> O)	...	...	2·76
Silica (SiO <sub>2</sub> )	...	64·64	Lithia (L <sub>2</sub> O)	...	...	absent
Alumina (Al <sub>2</sub> O <sub>3</sub> )	...	14·49	Titanium dioxide (TiO <sub>2</sub> )	...	...	0·65
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	...	2·30	Zirconium dioxide (ZrO <sub>2</sub> )	...	...	absent
Ferrous oxide (FeO)	...	3·69	Iron sulphide (FeS <sub>2</sub> )	...	...	absent
Manganous oxide (MnO)	...	0·12	Sulphur trioxide (SO <sub>3</sub> )	...	...	0·08
Nickel and cobalt oxides			Phosphoric anhydride (P <sub>2</sub> O <sub>5</sub> )	...	...	0·11
(NiO-CoO)	...	0·01	Vanadic oxide (V <sub>2</sub> O <sub>5</sub> )	...	...	minute trace
Calcium oxide (CaO)	...	3·42	Chromium sesquioxide (Cr <sub>2</sub> O <sub>3</sub> )	...	...	ditto
Magnesium oxide (MgO)	...	2·93	Chlorine (Cl)	...	...	absent
Barium oxide (BaO)	...	0·06				99·81
Strontium oxide (SrO)	...	present*				

\* Spectroscopic reaction only.

Specific gravity of rock = 2·735.

The soils of these plains around the Federal Capital are siliceous rather than basic, and the feature which is noticeable at Canberra, and other similar plains, is, that if there are any con-

siderable elevations, of say, 200 feet or upwards, rising above the plain, then such elevations produce trees. The inference is, therefore, that there is some difference, either chemical or physical, between the soils on the well drained hills, and the soils of



Text-fig.2.

Buds of *Eucalyptus dealbata* enlarged by dipterous larvæ.

the lowland; and it may be that, even though the geological formation is the same from which the soils of hill and valley are originally produced, certain salts are leached out from the high land and carried down to the lower, thus differentiating the characters of the two soils.

It is usual, of course, for both valley and height to produce trees, the differences in soil accounting perhaps for different local species, but this does not apply to the Canberra Plains, which, for some unexplained reason, are for the most part treeless, though all the considerable elevations around are clad with forest-growths.

#### INSECT ACTION ON TWIGS AND BUDS.

Some gouty swellings were found at the Cotter River on fruiting twigs of *Eucalyptus hæmastoma* (Brittle Gum), which, Mr. W. W. Froggatt, F.L.S., informs me are caused by the attack of small chalcid wasps (Chalcididæ), some of which are plant-feeders and deposit their eggs just under the bark. The effect on these twigs was such that, in some cases, for a length of 15.3 cm. (about  $6\frac{3}{4}$  inches), they had been increased in diameter from 2.5 mm. to 1.6 cm., or about  $6\frac{1}{2}$  times their original diameter.

In November, 1911, great numbers of very interesting insect-galls were found within the City site on many trees of *Eucalyptus dealbata* (Red Gum). The flower buds were aborted by a dipterous larva which Mr. Froggatt has kindly identified as belonging to the family Agromyzidæ. By the action of these larvæ, the buds had been increased in diameter from 2 mm. to as much as 1.2 cm., or six times their original size (Text-fig. 2). In some cases, five out of six buds in the umbel were affected. The effect of this swelling of the buds so greatly increased their weight, that broken branches were to be seen in many directions, reminding one of the result of a snow-storm.

#### PLANTS ABSENT FROM THE FEDERAL TERRITORY.

Owing largely to climatic reasons, several groups of plants are absent from this district, the locality being too cold for them, though, in more northern latitudes, they may ascend to greater elevations than 2,000 feet. No species of Angophora, the coastal Apple-Tree, was seen, and its absence from the south-western district was commented upon by Hume and Hovell, in their overland-journey in 1824 (*ibid.*, p. 87).\* No representative

\* For previous remarks in regard to distribution of this species, see these Proceedings, 1905, xxx., p. 207.



was seen of that large genus *Melaleuca*, which generally prefers a warmer climate. The whole of the Ironbark-trees are absent, these forming a group which avoid the cold, no species of true Ironbark occurring in Tasmania. No species of White Box was noticed, not even *Eucalyptus albens*, which creeps up the western slopes wherever it can find sufficient warmth, and may be found in isolated cases near Yass. The absence of *E. rostrata*, the Murray or River Red Gum, was noticed, but I was informed that it ascends the Murrumbidgee to Umbarra, some few miles below the Federal Territory, though it is unable to face the cold within the Territory itself. *E. globulus*, the Tasmanian Blue Gum, was not seen, although the climatic conditions are suitable, and it occurs lower down the Murrumbidgee, at Burrinjuck, and may possibly yet be found in the valley of the Cotter.

#### GENERAL REMARKS ON VARIOUS SPECIES.

The notes for this paper were obtained during short visits to the locality in November and December, 1911, and January, 1912. In addition to the area immediately surrounding the City site, the routes examined were the following:—Canberra to Queanbeyan and along the Bungendore Road; the Gundaroo Road; Canberra to the junction of the Cotter and Murrumbidgee Rivers, and up the Cotter just above the dam; Canberra to the summit of Mount Coree; to Tharwa, Booroomba, and the summit of Mount Tidbinbilla; Tharwa to Gudgenby, thence up Middle Creek across to the Upper Cotter, and to the summit of Bimberi Peak. It will be seen that there were many spots not visited, so that the list of plants must be regarded as incomplete.

Mount Tidbinbilla.—Within a radius of 20 yards around the actual summit of Tidbinbilla (5,115 feet), the following plants were noticed:—

GRAMINEÆ : *Poa cæspitosa* (SNOW-TUSsock or SNOW-GRASS).

JUNCACEÆ : *Luzula campestris*.

LILIACEÆ : *Bulbine bulbosa*, *Dianella tasmanica*.

ORCHIDACEÆ : *Caladenia dimorpha*.

CARYOPHYLLACEÆ : *Stellaria pungens*, *Scleranthus biflorus*.

LEGUMINOSÆ: *Acacia penninervis* (Mountain Hickory), *Oxylobium procumbens*(?), *Daviesia ulicina*, *Hovea linearis*.

RUTACEÆ: *Eriostemon myoporoides*.

VIOLACEÆ: *Viola betonicæfolia* (Native Violet).

THYMELEACEÆ: *Pimelea* sp.

MYRTACEÆ: *Eucalyptus coriacea* (Snow-Gum), *Kunzea peduncularis*, *Callistemon lophanthus*, *Bæckea Gunniana*.

EPACRIDACEÆ: *Leucopogon biflorus*, *L. Fraseri* (prostrate), *Acrotriche aggregata*.

SCROPHULARIACEÆ: *Veronica perfoliata*.

GOODENIACEÆ: *Goodenia hederacea*.

CANDOLLEACEÆ: *Candollea serrulata* (Trigger-Flower).

COMPOSITEÆ: *Brachycome* sp., *Helipterum incanum*, *Microseris Forsteri*.

Bimberi Peak.—Writing from memory, the summit of this granite-mountain is approximately a quarter of a mile long, by about 200 or 300 yards wide, the highest point being 6,264 feet above sea-level.

On viewing the flora of this elevated spot on the 15th January, 1912, the feature which impressed me most was the high colouring of the flowers and their great numbers. Masses were to be seen of flowering examples of *Brachycome scapigera* (a Yellow Daisy), and these were blended with others of *Senecio*, *Podolepis*, and *Helichrysum*, the hill being charmingly crested and brightened with a profusion of yellow and white, distributed amongst a groundwork of countless, graceful, grey flowers of the Snow Grass.

The only species of *Eucalyptus* found on the summit was *E. coriacea* (No.3470), occurring as spreading, dwarfed trees of from 10 to 20 feet high, and flowering, the branches being intensely glaucous. This species grows at a slightly higher level on Kosciusko, but it is doubtful if any other *Eucalypt* grows at an elevation exceeding that of Mount Bimberi. This was also the only *Eucalyptus* found on the summits of Tidbinbilla and Coree. *Helichrysum ledifolium* was seen only on the summit, and this species, which occurs in Tasmania, had not been previously recorded for New South Wales.

The following is a list of plants noticed on Bimberi, and in most cases also collected, above the 6,100 feet level, though doubtless several species were overlooked:—

POLYPODIACEÆ: *Polystichum aculeatum* (a common fern in the cold areas of Southern New South Wales).

GRAMINEÆ: *Poa cæspitosa* (Snow-Tussock, or Snow-Grass, in flower all over the summit).

RESTIONACEÆ: *Festuca Hookeriana*, *Hypolaena lateriflora* (a weak, straggling, wiry plant of a few feet high, growing in masses in damp or swampy places, and slightly resembling *Caustis flexuosa*, a common Sydney plant).

ORCHIDACEÆ: *Thelymitra venosa* (a blue Orchid).

PROTEACEÆ: *Orites lancifolia*, *Grevillea australis* (a very narrow-leaved form. This is the only *Grevillea* which occurs in Tasmania, the genus being one which favours a warm climate).

PITTOSPORACEÆ: *Marianthus procumbens*.

POLYGALACEÆ: *Comesperma retusum*.

THYMELEACEÆ: *Pimelea ligustrina*.

MYRTACEÆ: *Eucalyptus coriacea* (Snow-Gum), *Callistemon Sieberi* (the flowering was just over), *Bæckea Gunniana*.

UMBELLIFERÆ: *Aciphylla simplicifolia*.

EPACRIDACEÆ: *Epacris paludosa*, *E. microphylla*, *Richea Gunnii*.

LABIATÆ: *Prostanthera cuneata* (with whitish flowers).

RUBIACEÆ: *Asperula oligantha*.

COMPOSITÆ: *Olearia stellulata*, *Celmisia longifolia* (Silver Daisy), *Brachycome scapigera*, *B. discolor*, *Podolepis longipedata*, *Leptorrhynchos squamatus*, *Helichrysum scorpioides*, *H. ledifolium*, *Erechtites quadridentata* (a broad-leaved form), *Senecio pectinatus*, *Microseris Forsteri*.

Thirteen species of ferns were found within the Territory, the most of them being in sheltered portions of the mountain-slopes.

Of the Gramineæ or grasses, twenty-one species were noticed, four of which were naturalised. Probably several native species escaped notice during my hurried visits. *Poa cæspitosa*, the Snow-Grass or Snow-Tussock, is an interesting plant in view of

its very wide range in Australia and New Zealand, and its adaptability to environment. Along the coast it is often known as "White Tussock," because of its pale grey colour, and is regarded as an indication of good forest-land; it may occur within a short distance of the ocean, and sometimes, in favoured situations, grows into robust plants of three to four feet high. It shows its disregard for climatic effect by climbing from sea-level to upwards of 6,000 feet, where, owing to the influence of more rigid conditions, it becomes matted and dwarfed, losing much of the tussocky form, and in summer is most useful as sheep-fodder.

Among the Liliaceæ, the somewhat succulent little plant, *Bulbine bulbosa*, was found in various places, including the summit of Tidbinbilla. This species has an extended range in Eastern Australia and Tasmania, and in addition to being found at elevations of 5,100 feet, as in this case, its yellow flowers are conspicuous every spring in the much drier interior at such places as the Macquarie and Lachlan Rivers.

The little terrestrial orchid, *Caladenia dimorpha*, was only noticed within a few yards of the actual summit of Tidbinbilla, while *C. alba* was seen a few hundred feet lower.

*Casuarina stricta* (She-Oak) was found on various hills, including Ainslie, Majura, Stromla (2,560 feet), and Mugga Mugga (2,662 feet), near Tharwa, and also to the west of the Naas River on the ascent to Gudgenby, where it was growing on the northern or warm side of granite-hills at elevations up to 3,000 feet. I have not found it at an altitude exceeding this.\*

*Casuarina Cunninghamiana* (River-Oak) occurs along the banks of the Murrumbidgee up to within about four miles of Tharwa; above this point, the country is evidently too cold for it. This is an attractive-looking tree and always grows within reach of fresh water, but is restricted in the extent of river it will follow, by the degree of cold in the highland and warmth in the lowland. This Oak-tree may be found on the rivers from Tropical Queensland southerly to the Murrumbidgee and its

\* For previous remarks, see These Proceedings, 1909, Vol. xxxiv., p.326.

tributaries, but is not recorded from Victoria. The first reference to its absence from the Murray or Hume River is that by Hovell and Hume in the report of their exploration from Goulburn to Port Phillip.\* When referring to the river, their note reads: "but there was no swamp-oak, the tree so universal on the rivers to the northward and eastward" (p.44).†

A small clump of *Casuarina Luehmanni*, the Bull Oak of the interior, was found near where the Gundaroo Road, at about  $2\frac{1}{4}$  miles from Queanbeyan, passes the Molonglo River. The trees were confined to a high, steeply sloping, volcanic tuff bank of from 40 to 70 feet deep, on the southern side of the River, and, while facing a northern aspect, were well sheltered from the cold southerly influence (Plate lxxi.). Although the branches and stems of some of the Oak-trees reached above the bank, it was noticed that their bases were all below the summit, which signifies that, in the early seedling-stage, the plants require shelter to allow them to become established. The finding of these trees in the Territory was a matter of great surprise, for the nearest locality where they are known to me is between Cootamundra and Temora, a distance of about 80 miles in a direct line, though some may possibly have occurred at intervening spots along the valley of the Murrumbidgee. The species is one having a very wide distribution, extending from the south-eastern portion of South Australia, across part of Victoria and the whole of Central and part of Western New South Wales, continuing along the eastern portion of Queensland at least as far as Bibbohra, west of Cairns, in latitude  $17^{\circ}$ ; and, in places, pushing through low gaps in the mountains, towards the east coast, but usually selecting a warm climate. It comes through the Cassilis Geocol and down the Hunter Valley to near Ravensworth and Pokolbin, where it overlaps the coastal salt or brackish-water Swamp-Oak (*C. glauca*), and it may be seen from the train between Bundaberg and Gladstone in Queensland. In 1899, a few trees of

---

\* Journey of Discovery to Port Phillip, N. S. Wales, in 1824 and 1825, by W. H. Hovell and H. Hume.

† For some previous remarks, see Journ. Proc. Roy. Soc. N. S. Wales, Vol. xlix., p.399(1915). Also, These Proceedings, 1901, Vol. xxvi., p.685.

dwarfed Bull-oak were seen on the southern bank of the Fish River, near O'Connell, in the Bathurst district, and these were growing under somewhat similar conditions, and at approximately the same elevation, about 2,100 feet, as those under discussion on the Molonglo River, which are also rather diminutive specimens, ranging from 12 to 20 feet high, with a stem-diameter up to 9 or 10 inches in a few cases.

The question that naturally arises is, how did these trees find their way to this spot so far from their congeners? Dispersal of seeds by wind can probably be ignored in this case, and dispersal by birds, though much more likely, can scarcely be shown to account for it, although this possibility calls for consideration. There are very few spots within the Federal Territory where seedlings of this species would survive without special care, owing to the coldness of the winter climate. The birds which chiefly feed on *Casuarina* seeds by tearing open the small cones are of the cockatoo-family, *Calyptorhynchus viridis*, the Glossy Cockatoo or so-called Macaw, and there would be nothing remarkable in finding that one of these birds had visited both the Cootamundra and Queanbeyan districts within a few days. At the same time, there is the coincidence to be accounted for that a seed should be deposited in one of the few spots which would result in the production of a mature tree. It must also be borne in mind that this is a dioecious species, the male and female flowers occurring on separate trees, so that it would be necessary that seeds, producing a pair of trees, should reach the same locality before the species could become established.

It may be considered possible that the seeds were conveyed by natives, but the seeds ripen in midsummer and fall out of the cones within a few days (usually two), after being gathered, and the natives would, therefore, have required closely woven bags to retain them.

The genus is known to be an ancient one, having been identified in fossil form in the Tertiary flora.\* This particular species

---

\* Ettingshausen, "Contributions to the Tertiary Flora of Australia," p.107.

is probably old, considering its wide distribution, and if representatives had been growing in this vicinity, at the time of the Eastern Australian uplift in late Tertiary time,\* which seems quite possible, some plants may have survived, during the gradual upheaval, and their descendants, on finding the new conditions too cold, would gradually have become restricted to the warmer and more sheltered nooks where the geological formation was favourable to their growth, and would, thereby, come under the heading of relics or stranded plants. A difficulty about accepting this explanation is that this Oak is a warmth-loving species, and, at an elevation of 2,000 feet, would have found it difficult to survive the Pleistocene glacial period which is generally regarded as of subsequent date to the uplift that formed the present mountains. The fact is clear, however, that these particular Oak trees are now growing near the Molonglo River, and although they certainly appear to be stranded plants, the process by which they reached this spot must remain unsolved, at least for the present.

*Grevillea juniperina* is one of the most attractive shrubs within the Federal Territory, chiefly because of its beautiful, red, spider-like flowers. It was noticed on the right bank of the Murrumbidgee near its junction with the Cotter, growing as thick spreading bushes up to 10 feet high (Plate lxxii.). It was flowering in November, and among the birds, which were evidently after its honey, were the Leatherheads (*Tropidorhynchus corniculatus*). At Mongarlowe, near Braidwood, this species was seen in November, 1908, with yellow, as well as red flowers, and in several cases both colours were noticed on the same plant. The feature has been observed by others.

*Banksia marginata* (Honeysuckle) was seen in many portions of the Capital Territory, ascending to an elevation of 4,000 feet, and occurring chiefly in the granite or somewhat siliceous areas.

The trees appear to reach greater dimensions than do those of this species in the Sydney district, and examples were seen with

---

\* "Geographical Unity of Eastern Australia," by E. C. Andrews, B.A., Journ. Proc. Roy. Soc. N. S. Wales, Vol. xlv., p. 420 (1910).—Presidential Address by C. Hedley, F.L.S., These Proceedings, 1911, Vol. xxxvi., p. 13.

trunks up to two feet in diameter and a height of twenty feet. Some of the finest are growing in granite-formation around Booroomba (Plate lxxiii.). Although this Honeysuckle always avoids soils derived from basic rocks, it has a wide range, and is doubtless the species referred to by Hume and Hovell as occurring on the Yass Plains in 1824.

The genus *Loranthus* (Mistletoes) appears to be only sparsely represented in the Territory, and is practically confined to the levels below about 3,000 feet. The *Loranthus* is not a lover of extreme cold, and its general absence from part of the southern highlands was noticed some years ago,\* while there is no record of the genus occurring at all in Tasmania.

Two species of *Drosera* (Sundews) were collected, and from the paper in which they were pressed, it has since been noticed that when drying, specimens of *D. peltata* from Gudgenby at 4,500 feet, dyed the paper pink leaving the impression of stems and flowers.

Of the family Leguminosæ, fifteen species of *Acacia* (Wattles) were seen, and next after the Eucalypts this was the greatest number of species found of any genus.

The plants identified as *A. obtusata*, from Black Mountain, sometimes reach 7 or 8 feet high. Around Mount Coree, they are locally known as Blue Wattle, from the slight colouring sometimes appearing on the leaves and stems, though on many plants the bark is reddish-brown.

*Acacia pravissima* grows to a height of from 6 to 10 feet, with somewhat pendulous branches. The pods ripen during the latter part of December.

*Oxylobium alpestre* was seen as spreading shrubs, semi-prostrate, above the 5,500 feet level on Bimberi, and it was noticed that the wombats (*Phascolomys mitchelli*), which are fairly plentiful at many places on these highlands, had undermined many of these plants, upon the roots or possibly root-nodules of which they evidently feed.

---

\* "Eastern Monaro," by R. H. Cambage. These Proceedings, 1909, Vol. xxxiv., p.331.



*Tetradlea ericifolia* was found near Coree and Booroomba. It has been noticed, over many years of collecting, that flowers of this species and its variety *thymifolia* keep their pinkish colour for years, or very much longer than those of the majority of Australian plants, and it seems evident that these flowers contain some dye of a fixed nature which is probably worth investigating.

Five species of Pomaderris were seen, distributed over various portions of the Territory. Unless some disinfectant is used in herbaria, the flowers of most plants are attacked by insects, orchids, for instance, being devoured in a very short time; but plants of the genus Pomaderris seem to possess some resisting qualities, as its flowers may remain intact for several years without any special care.

*Brachychiton populneus* (Kurrajong) is not common within the Capital Territory, the locality being rather cold for it. There is one fairly large tree, however, on the summit of a quartzite hill within the Capital City site, and from which the hill has taken its name. This species is a lover of limestone-formation, and in places on the Western Slopes may occupy almost exclusively certain areas where there is a considerable outcrop of limestone. It is remarkable, therefore, that it should flourish on this quartzite-hill, the rocks of which contain only a trace of lime, according to Mr. J. C. H. Mingaye, but have a high percentage of silica, a constituent which this plant does not favour when present in large quantities. A few Kurrajongs were noticed at other spots, notably between the Naas River and Gudgenby, in which locality they were chiefly on the north or warm sides of the hills, and by this means were able to grow at higher altitudes than usual in this latitude, one tree being seen at an elevation of about 2,600 feet above sea-level.

*Viola betonicæfolia* and *V. hederacea*, commonly known as Wild Violets, were seen in many shady nooks throughout the Territory, and the beautiful dark blue flowers of the former were noticed as far up as between the 5,500 and 6,000 feet levels on Bimberi Peak.

Of the Eucalypts seen within the Federal Territory, none has so great a vertical range as *E. coriacea*, which extends from the City site at about 2,000 feet, to the summit of Bimberi at 6,264 feet. On the lower land, it is often known as Scribbly Gum from the insect-markings which appear like scribbles on the bark, a feature not confined to this species, but on the high mountains, where it is dwarfed and grows as a spreading plant with several stems, it is usually known as Snow-Gum.

The largest trees within the Federal Territory are *E. gigantea* and *E. fastigata*, and both are common on Brindabella Mountain near Coree, the former being known as White, and the latter as Black Mountain Ash.

*E. gigantea* was described by Hooker,\* but there seems no doubt that, when doing so, he had in his mind the present tree, and also a previously described Stringybark, *E. obliqua* L'Hérit., both occurring in Tasmania, the latter being the more common of the two. When the identity of *E. obliqua* was afterwards placed beyond doubt, *E. gigantea* was accepted as a synonym. In 1900, Mr. R. T. Baker, F.L.S., described this tree under the name of *E. Delegatensis*, from Southern New South Wales,† and pointed out its specific characters. In 1913, Mr. Maiden reproduced Hooker's figure of *E. gigantea* as given in the Flora of Tasmania (Vol. i., p. 136), and showed how the confusion between *E. obliqua* and *E. gigantea* had arisen.‡ In Hooker's figure, the fruits depicted appear to be those of the Mountain Ash, and not those of *E. obliqua*.

The bark of this Ash for about half-way up the trunk is fibrous, while the upper portion and the branches are smooth and white, hence the prefix, white, before the name of Ash or Mountain Ash. The timber of this species, though very valuable, is known to be light and fissile, and, on examining seedlings of 4-5 feet high, on Brindabella Mountain, it was noticed that the wood was exceptionally soft and would snap with only a

---

\* Lond. Journ. Bot., vi., 479 (1847).

† These Proceedings, 1900, Vol. xxv., p. 305.

‡ "Forest Flora of New South Wales," Part li.

gentle pressure. So far as I know, the most northern tree of this species is about three miles north of Mount Coree.\*

*Eucalyptus fastigata* is very plentiful along the mountain-sides under Coree and Tidbinbilla, and as its trunk and large branches are covered with fibrous, brown bark, it is, in contradistinction to the White Ash, called Black Mountain Ash. Its great affinity with the giant gumtree of Victoria, *E. regnans* F.v.M., is well known, and since *E. fastigata* was described by Deane & Maiden, the latter has expressed the view that it is only a form of the former.† At the same time, it appears as a distinct tree when seen in the forest, for while the Victorian and Tasmanian representatives of *E. regnans* are tall gumtrees with fibrous bark for only 10 or 20 feet at the base, *E. fastigata*, wherever it has been seen over its wide range in this State, has fibrous bark on its trunk and large branches.

*E. dives* and *E. maculosa* are often found in association, and both will thrive in soils heavily charged with iron.

*E. macrorrhyncha* (Red Stringybark) is not uncommon, and, with *E. haemastoma* (Brittle Gum), and a few trees of *Exocarpus cupressiformis* (Wild Cherry), takes possession of the higher portions of the Black Mountain, all three being lovers of a siliceous formation.

*Eucalyptus polyanthemus* (Red Box) is fairly common throughout the lower levels, and is the form (*E. ovalifolia* R. T. Baker) with smooth gum-tree bark, except that, in many cases, the bark is flaky for a few feet at the base, and as forest-trees are dissimilar to the rough-barked Red Box of Victoria and around Albury. The great lasting qualities of Red Box posts are well known throughout the Federal Territory.

*E. elaeophora* (*E. Cambagei*, Mountain-Apple, No.3000) occurs at various points, and around Tharwa and Booroomba appeared almost white in November, with its intensely glaucous fruits and branchlets.

---

\* For previous remarks on this species under the name of *E. delegatensis*, occurring near Tumbarumba, see These Proceedings, 1904, Vol. xxix., p.690.

† See "A Critical Revision of the Genus *Eucalyptus*," by J. H. Maiden, Part vii. (1905).

*E. camphora* (Swamp Gum, No.3342) was seen only on Coree Creek, near S. A. Shannon's, though it has a considerable range on the highlands of New South Wales, southwards from the Rylstone district. In January, 1913, it was found at various points on the Omeo-Mount Hotham Road, in Victoria, between the 3,000 and 4,000 feet levels (No.3682).

The plants identified as *Leptospermum attenuatum* were seen up to 12 feet high, chiefly on the banks of streams, and have hard, firm, grey bark, and not scaly or flaky bark such as is found on plants recognised as of this species occurring around Sydney and on the Blue Mountains.

*Kunzea Muelleri* was observed in the drier portions of swampy areas on the highlands around the Upper Cotter, growing in small masses of about a foot high, and having whitish flowers. These plants are associated with *Aciphylla simplicifolia*, *Epacris paludosa*, *Juncus falcatus*, and perhaps *Celmisia longifolia* (Plate lxxiv.).

*Kunzea peduncularis* was seen up to 15 feet high, with somewhat flaky bark, on the river-banks, and it occurs on some of the mountain-summits as a tough, stunted plant of a few feet. Mr. John Blundell, of Coree, informed me that the blacks formerly split pieces of the wood of this highland form, which they called Budawang, and, after hardening it by fire, used it as needles to pierce holes in the skins of various animals so that such skins might be sewed together for use as rugs.

*Richea Gunnii* was found only on the summit of Bimberi Peak, and is an alpine plant with very beautiful clusters of flowers somewhat resembling those of *Dracophyllum secundum*, which grows along the coastal districts.

*Pomax umbellata* is growing on the northern slopes of Black Mountain, selecting a similar highly siliceous formation to that which it favours around Sydney and on the Blue Mountains.

*Wahlenbergia gracilis* (Blue Bell) and *Candollea serrulata* (Trigger-Flower) were seen at their best at elevations between (4,000 and 5,000 feet. Their colours were deeper than usual, a common feature with plants at high altitudes, and the two species formed separate masses of most charming deep blue and red, the

distant blending of which gave a brightness to the open forest, and formed a beautiful setting, in one of Nature's many artistic designs.

*Olearia argophylla* (Musk-Tree), which grows to a height of over 20 feet, and is regarded as the largest Composite in the world, is growing in the sheltered portions of Mount Coree, associated with *Dicksonia antarctica* and *Bedfordia salicina*, thus showing that the locality is not exposed to the western or dry atmosphere, but is in a zone of moisture resulting from a good rainfall on the mountain-side. In this, and similar sheltered situations within the Federal Territory, the Lyre Bird, *Menura superba*, has its home.

#### LIST OF PLANTS.

The following is a list of plants seen within the Federal Capital Territory:—

HEPATICEÆ: *Marchantia polymorpha* L., (a cosmopolitan species).

CYATHEACEÆ: *Dicksonia antarctica* Labill., (Tree-ferns on Mount Coree).

POLYPODIACEÆ: *Dryopteris punctata* (Thunb.) C. Chr., (*Polypodium punctatum* Thunb.), *Polystichum aculeatum* (L.) Schott, (*Aspidium aculeatum* Swartz), *Asplenium flabellifolium* Cav., *Pleurosorus rutifolius* (R.Br.), *Blechnum cartilagineum* Sw., *B. discolor* (Forst.) Keys., (*Lomaria discolor* Willd.), *B. pennamarina* (Poir.) Kuhn, (*Lomaria alpina* Spreng.), *B. capense* (L.) Schlecht., (*L. capensis* Willd.), *Cheilanthes tenuifolia* Sw., (plants up to 1 foot 9 inches on Black Mountain), *Adiantum aethiopicum* L., (Maiden-Hair Fern), *Pteridium aquilinum* L. Kuhn., (*Pteris aquilina* L., Bracken), *Polypodium diversifolium* Willd., (*P. scandens* Labill).

PINACEÆ: *Callitris calcarata* R.Br., (Black or Mountain Pine).

TYPHACEÆ: *Typha angustifolia* L., (Bullrush, in Canbury Creek and other streams).

POTAMOGETONACEÆ: *Potamogeton tricarinatus* F.v.M. & A. Benn., (*P. natans* Benth., non L.), *P. perfoliatus* L.

JUNCAGINACEÆ: *Triglochin procera* R.Br.

ALISMATACEÆ: *Alisma plantago* L., (along the banks of the Molonglo River, and flowering in December).

GRAMINEÆ: *Andropogon affinis* R.Br., *A. refractus* R.Br., *Themeda Forskalii* Hack., (*Anthistiria ciliata* Benth., Kangaroo Grass), *Panicum effusum* R.Br., *Stipa scabra* Lindl., (Silver Grass), *Echinopogon ovatus* Beauv., (Saw Grass), *Calamagrostis cernua* Steud., (*Deyeuxia Forsteri* Kunth), *Holcus lanatus* L., (naturalised), *Aira caryophyllea* L., (Fairy Grass), *Danthonia carphoides* F.v.M., *D. penicillata* F.v.M., var. *semiannularis* F.v.M., *Cynodon dactylon* Rich., (Couch Grass, common in hot and some temperate countries), *Chloris truncata* R.Br., (Umbrella Grass), *Pappophorum commune* F.v.M., *Phragmites communis* Trin., (*Arundo Phragmites* L.), *Kœleria phleoides* Pers., (naturalised), *Poa cæspitosa* G. Forst., (White or Snow Tussocks), *Festuca Hookeriana* F.v.M., (*Schedonorus Hookeriana* Benth.), *F. bromoides* L., (naturalised), *Bromus maximus* Desf., (naturalised), *Hordeum murinum* L., (Barley Grass; naturalised).

CYPERACEÆ: *Kyllingia intermedia* R.Br., (*K. brevifolia* Rottb.), *Cyperus sanguineo-fuscus* Nees, *C. Gunnii* Hook., (*C. lucidus* R.Br.), *Eleocharis acuta* R.Br., *E. cylindrostachys* Boeck., *Scirpus cernuus* Vahl, (*A. riparius* Benth.), *S. inundatus* Poir., *S. stellatus* C. B. Clarke, (*S. cartilagineus* Benth.), *S. lacustris* L., *S. polystachyus* F.v.M., *Carex tereticaulis* F.v.M., *C. appressa* R.Br., *C. Gaudichaudiana* Kunth, *C. pseudo-cyperus* L.

RESTIONACEÆ: *Restio australis* R.Br., (at Gudgenby), *Hypolaena lateriflora* Benth.

JUNCACEÆ: *Luzula campestris* DC., *Juncus bufonius* L., *J. plebeius* R.Br., (*J. homalocaulis* F.v.M.), *J. pallidus* R.Br., *J. radula* Buch., *J. vaginatus* R.Br., *J. polyanthemus* Buch., *J. prismatocarpus* R.Br., *J. Fockei* Buch., *J. lamprocarpus* Ehr., *J. falcatus* E. Mey.

LILIACEÆ: *Anguillaria dioica* R.Br., (*Wurmbea dioica* F.v.M.), *Bulbine bulbosa* Haw., *Thysanotus tuberosus* R.Br., (Fringed Violet), *Arthropodium paniculatum* R.Br., *Tricoryne elatior* R.Br., *Stypandra glauca* R.Br., *Dianella tasmanica* Hook., *D. revoluta* R.Br., *Xerotes longifolia* R.Br., *X. multiflora* R.Br., *X. filiformis* R.Br., *X. glauca* R.Br., *Xanthorrhœa* sp. (Grass-Tree, at Lower Cotter and Booroomba).

AMARYLLIDACEÆ : *Hypoxis hygrometrica* Labill.

ORCHIDACEÆ : *Gastrodia sesamoides* R.Br., *Thelymitra venosa* R.Br., *Diuris maculata* Sm., (Spotted Orchid), *D. sulphurea* R.Br., *Prasophyllum fuscum* R.Br., (?) *Pterostylis curta* R.Br., (?) *P. obtusa* R.Br., (near Gudgenby, at 4,700 feet), *P. rufa* R.Br., (at Booroomba, a form with very short points to the sepals and petals), *Caladenia testacea* R.Br., *C. alba* R.Br., (on side of Tidbinbilla), *C. dimorpha* Fitzg., (on summit of Tidbinbilla).

CASUARINEÆ : *Casuarina stricta* Ait., (She-oak, *C. quadrivalvis*), *C. Luehmanni* R. T. Baker, (Bull-Oak), *C. Cunninghamiana* Miq., (River-Oak).

URTICACEÆ : *Urtica incisa* Poir., (Nettle), *Australina pusilla* Gaud.

PROTEACEÆ : *Persoonia chamæpeuce* Lhotsky, (Prostrate Geebung, at Gudgenby), *Orites lancifolia* F.v.M., (on Mount Bimberi), *Grevillea lanigera* A. Cunn., *G. juniperina* R.Br., (at junction of Murrumbidgee and Cotter Rivers), *G. australis* R.Br., (a very narrow-leaved form), *Hakea sericea* Schrad., (*H. acicularis* R.Br.), *H. microcarpa* R.Br., *Lomatia longifolia* R.Br., *Banksia marginata* Cav., (Honeysuckle).

SANTALACEÆ : *Exocarpus cupressiformis* Labill., (Native Cherry), *E. stricta* R.Br., *Choretrum spicatum* F.v.M., *Omphalcomeria acerba* A. DC.

LORANTHACEÆ : *Loranthus pendulus* Sieb., (Mistletoe, with *Eucalyptus dives* as host).

POLYGONACEÆ : *Rumex Brownii* Campd., *R. acetosella* L., (Sorrel; naturalised), *Polygonum prostratum* R.Br., *P. minus* Huds., (Smart-Eye, in bed of Murrumbidgee and other streams).

CHENOPODIACEÆ : *Chenopodium triangulare* R.Br.

CARYOPHYLLACEÆ : *Silene gallica* L., (naturalised), *Cerastium vulgatum* L., (Mouse-ear Chick-weed, naturalised), *Stellaria pungens* Brong., *Spergularia rubra* Camb., *Tunica prolifera* Scop., (Dianthus, naturalised), *Scleranthus biflorus* Hook., (Cushion-Plants forming green compact mats).

RANUNCULACEÆ : *Clematis aristata* R.Br., *C. microphylla* DC., *Ranunculus aquatilis* L.(?), *R. lappaceus* Sm., (Buttercup), *R.*

*hirtus* Banks and Sol., (*R. plebeius* R.Br.), *R. rivularis* Banks and Sol., *R. parviflorus* L.

MAGNOLIACEÆ: *Drimys aromatica* F.v.M., (Peppercorn).

MONIMIACEÆ: *Helycarya angustifolia* A. Cunn., (*H. Cunninghamii* Tul., Native Mulberry).

LAURACEÆ: *Cassytha phaeolasia* F.v.M., (Dodder), *C. melantha* R.Br.

CRUCIFERÆ: *Cardamine hirsuta* L., var. *tenuifolia* F.v.M., (*C. tenuifolia* Hook.).

DROSERACEÆ: *Drosera peltata* Sm., (Sundew or Fly-catcher), *D. auriculata* Backh

CRASSULACEÆ: *Tillœa verticillaris* DC.

PITTIOSPORACEÆ: *Marianthus procumbens* Benth., *Bursaria spinosa* Cav., (Whitethorn), *Billardiera scandens* Sm., (Roly-Poly Vine).

ROSACEÆ: *Rubus parvifolius* L., (Redberry), *Acœna ovina* A. Cunn., *A. sanguisorbæ* Vahl, (Burr).

LEGUMINOSÆ: Sub-family Mimosoideæ:—*Acacia lanigera* A. Cunn., var. *venulosa*, (*A. venulosa* Benth., on Black Mountain), *A. siculiformis* A. Cunn., (at Tidbinbilla and Gudgenby), *A. diffusa* Edw., (Prickly Wattle), *A. armata* R.Br., (Kangaroo-Thorn, on Mount Ainslie), *A. verniciflua* A. Cunn., *A. penninervis* Sieb., (Mountain-Hickory), *A. obtusata* Sieb., (on Black Mountain and Coree), *A. rubida* A. Cunn., (Red-leaved Wattle), *A. buxifolia* A. Cunn., *A. pravissima* F.v.M., (Cotter River near the dam, and on the divide between the Gudgenby and Cotter waters, at 4,500 feet), *A. Dawsoni* R. T. Baker, (near Gundaroo Road from Queanbeyan), *A. melanoxyloa* R.Br., (Hickory or Tasmanian Blackwood), *A. implexa* Benth., *A. decurrens* Willd., var. *mollis*, (Green Wattle, seen only in the northern or lower portion of the Territory), *A. dealbata* Link, (Silver Wattle). Sub-family Papilionatæ:—*Trifolium arvense* L., (Hare's-foot Trefoil, naturalised), *Oxylobium ellipticum* R.Br., var. *alpinum*, (on Tidbinbilla at 4,500 feet, and on Bimberi at 5,300 feet), *O. alpestre* F.v.M., *O. Pulteneæ* DC., *O. procumbens* F.v.M.(?), *Mirbelia oxylobioides* F.v.M., *Gompholobium Huegelii* Benth., *G. grandiflorum* Sm.(?), *G. uncinatum* A. Cunn., *Daviesia corym-*



*bosa* Sm., *D. ulicina* Sm., *Pultenea Muelleri* Benth. (?), (on Brindabella Mountain), *P. procumbens* A. Cunn., (at Booroomba, on granite at 3,700 feet), *P. fasciculata* Benth., (at 4,500 feet, Gudgenby to Cotter River, rare in New South Wales), *Dillwynia ericifolia* Sm., var. *phylicoides*, *Platylobium formosum* Sm., (around Coree), *Bossia buxifolia* A. Cunn., (at Booroomba), *B. Walkeri* F.v.M., (5 feet high, with a cluster of from 30 to 40 stems; at junction of Murrumbidgee and Cotter), *Hovea linearis* R.Br., *Lotus corniculatus* L., (Upper Cotter), *L. australis* Andr., (Upper Cotter, flowers purple to pink), *Indigofera australis* Willd., (Indigo), *Psoralea ascendens* F.v.M., *Swainsonia tephrotricha* F.v.M., *Zornia diphylla* Pers., *Desmodium varians* Endl., *Glycine clandestina* Wendl., *G. Latrobeana* Benth., (with blue flowers among the grass, on the City site), *Hardenbergia monophylla* Benth., (False Sarsaparilla).

GERANIACEÆ: *Geranium dissectum* L., *Erodium cygnorum* Nees, *E. cicutarium* Willd., (naturalised), *Pelargonium australe* Willd.

OXALIDACEÆ: *Oxalis corniculata* L., (Sour Grass).

RUTACEÆ: *Boronia polygalifolia* Sm., *Eriostemon myoporoides* DC., *Phebalium squamulosum* Vent., var. *alpinum*, (at 4,500 feet on Coree), *Correa speciosa* Andr.

TREMANDRACEÆ: *Tetratheca ericifolia* Sm.

POLYGALACEÆ: *Comesperma retusum* Labill.

EUPHORBIACEÆ: *Phyllanthus thymoides* Sieb., *Euphorbia Drummondii* Boiss., *E. Lathyrus* L., (naturalised), *Poranthera microphylla* Brongn., *Bertya oleifolia* Planch., (near Murrumbidgee and Cotter junction).

STACKHOUSIACEÆ: *Stackhousia linariifolia* A. Cunn., (*S. monogyua* Labill.), *S. viminea* Sm.

SAPINDACEÆ: *Dodonaea viscosa* L., *D. attenuata* A. Cunn.

RHAMNACEÆ: *Pomaderris elliptica* Labill., (on Black Mountain), *P. apetala* Labill., *P. prunifolia* A. Cunn., *P. racemosa* Hook., *P. phylicifolia* Lodd., *Cryptandra spinescens* Sieb., *Discaria australis* Hook., (low prickly bushes, with sickly-sweet flowers).

MALVACEÆ: *Plagianthus pulchellus* A. Gray, also var.

*tomentosus* Hook., *Malva rotundifolia* L., (naturalised), *Modiola multifida* Mœnch., (naturalised).

STERCULIACEÆ: *Brachychiton populneus* R.Br., (*Sterculia diversifolia* G. Don, Kurrajong).

DILLENIACEÆ: *Hibbertia stricta* R.Br., *H. serpyllifolia* R.Br., *H. linearis* R.Br., var. *obtusifolia*.

GUTTIFERÆ: *Hypericum japonicum* Thunb., also var. *gramineum* F.v.M.

VIOLACEÆ: *Viola betonicifolia* Sm., (Native Violet), *V. hederacea* Labill.

THYMELÆACEÆ: *Pimelea glauca* R.Br., a form with very narrow and acute involueral bracts, *P. colorans* A. Cunn., *P. linifolia* Sm., *P. ligustrina* Labill., also var. *hypericina* Benth., *P. pauciflora* R.Br., *P. curviflora* R.Br., (No. 3473, three feet high, near Gudgenby).

LYTHRACEÆ: *Lythrum salicaria* L., (a swamp-plant), *L. hyssopifolia* L.

MYRTACEÆ: *Eucalyptus stellulata* Sieb., (Sally), *E. coriacea* A. Cunn., (Snow-Gum), *E. amygdalina* Labill., (Peppermint or Messmate), *E. fastigata* Deane and Maiden, (Black Mountain Ash; around Mounts Coree and Tidbinbilla), *E. dives* Schauer, (Peppermint), *E. gigantea* Hook., (*E. Delegatensis* R. T. Baker, White Mountain Ash), *E. macrorrhyncha* F.v.M., (Red Stringybark), *E. hæmastoma* Sm., (Brittle Gum), *E. melliodora* A. Cunn., (Yellow Box), *E. polyanthemos* Schauer, (Red Box), *E. rubida* Deane and Maiden, (a White Gum, with orbicular reversion-foliage), *E. maculosa* R. T. Baker, (a gum-tree, slightly spotted, but distinct from the Spotted Gum of the coast), *E. camphora* R. T. Baker, (on Condore Creek near Mount Coree), *E. aggregata* Deane and Maiden, (a few trees seen on a flat on western side of Bungendore Road, between the 48 and 49 mile posts from Goulburn), *E. elæophora* F.v.M., (*E. Cambagei* Deane and Maiden, Mountain Apple), *E. Brilgesiana* R. T. Baker, (Apple-Tree or Woollybutt; recognised by Mr. Maiden as *E. Stuartiana* F.v.M.), *E. viminalis* Labill., (White or Manna Gum), *E. Blakelyi* Maiden, (Forest Red Gum), *E. dealbata* A. Cunn., *Leptospermum flavescens* Sm., var. *obovatum* F.v.M., (near summit of Mount Coree),

*L. scoparium* Forst., (Tea-tree, the narrow-leaved form), *L. lanigerum* Sm., (along the banks of creeks; trees 30 feet high along the damp gullies on the slopes of Bimberi, just above the 5,000 feet level), *L. stellatum* Cav., *L. attenuatum* Sm., *L. myrtifolium* Sieb., *L. triloculare* Vent., (with silky-hairy calyx-tubes and leaves, on Black Mountain), *Kunzea Muelleri* Benth., (at 4,500 feet, on divide between Gudgenby and Cotter Rivers), *K. parvifolia* Schauer, (between the 7 and 8 mile posts, Queanbeyan to Tharwa Road), *K. peduncularis* F.v.M., (on banks of Murrumbidgee and other streams, also near the summits of Coree and Tidbinbilla; in full flower early in December), *Callistemon paludosus* F.v.M., in bed of Molonglo, Murrumbidgee, Paddy's and Cotter Rivers, flowering early in December, flowers creamy-purple), *C. lophanthus* Sweet, (near the summit of Mount Tidbinbilla), *C. Sieberi* DC., near the summit of Mount Bimberi), *Beechea Gunniana* Schauer, *Calycotrix (Calythrix) tetragona* Labill.

OENOTHERACEÆ: *Epilobium glabellum* G. Forst., *Oenothera biennis* L., (Primrose, naturalised).

HALORRHAGACEÆ: *Halorrhagis tetragyna* (Labill.) Hook., *H. micrantha* (Thunb.) R.Br., *Myriophyllum propinquum* A. Cunn.

ARALIACEÆ: *Tieghemopanax sambucifolius* H. Viguier, (*Panax sambucifolius* Sieb.), *Astrotricha ledifolia* DC., (on Black Mountain and Coree).

UMBELLIFERÆ: *Hydrocotyle laxiflora* DC., (*H. Candollei* F.v.M.), *Didiscus humilis* Hook., (*Trachymene humilis* Benth.), *Trachymene Billardieri* F.v.M., (*Siebera Billardieri* Benth., on Tidbinbilla), *Oreomyrrhis andicola* Endl., (Native Carraway-seed), *Aciphylla simplicifolia* F.v.M., (in damp spots on the highlands around Gudgenby and Bimberi), *Daucus brachiatus* Sieb.

EPACRIDACEÆ: *Styphelia triflora* Andr., *Melichrus urceolatus* R.Br., *Lissanthe strigosa* Sm., *Lencopogon lanceolatus* R.Br., *L. virgatus* R.Br., *L. Hookeri* Sond., *L. biflorus* R.Br., *L. Fraseri* A. Cunn., *Monotoca scoparia* R.Br., *Acrotriche aggregata* R.Br., *A. serrulata* R.Br., *Brachyloma daphnoides* Benth., *Epacris paludosa* R.Br., *E. brevifolia* Stapf, (at 3,000 feet on Mount Coree), *E. serpyllifolia* R.Br., *E. microphyllu* R.Br., *Richea Gunnii* Hook.

PRIMULACEÆ: *Anagallis arvensis* L., (Pimpernel, naturalised).

GENTIANACEÆ: *Erythraea australis* R.Br., *Limnanthemum crenatum* F.v.M., (an aquatic plant, with beautiful yellow, large, fringed flowers; in Molonglo River).

CONVOLVULACEÆ: *Convolvulus erubescens* Sims.

BORRAGINACEÆ: *Cynoglossum australe* R.Br.

LABIATE: *Mentha laxiflora* Benth., *M. australis* R.Br., (Penny Royal), *M. saturejoides* R.Br., *Salvia verbenacea* L., (naturalised), *Brunella* (*Prunella*) *vulgaris* DC., *Scutellaria humilis* R.Br., *Prostanthera lasianthos* Labill., (Native Lilac, called Turpentine-Bush at Coree), *P. cuneata* Benth., *Westringia eremicola* A. Cunn., (white flowers; opposite junction of Murrumbidgee and Co.ter), *Ajuga australis* R.Br.

SOLANACEÆ: *Solanum nigrum* L., *S. simile* F.v.M., *S. opucum* A.Br., (naturalised), *Datura stramonium* L., (naturalised).

SCROPHULARIACEÆ: *Mimulus moschatus* Dougl., (naturalised), *Gratiola Peruviana* L., (Brook-Lime), *G. nana* Benth., *Veronica perfoliata* R.Br., (on the highlands, with beautiful blue flowers), *V. Derwentia* Littlej., *V. gracilis* R.Br., *V. calycina* R.Br., *Euphrasia Brownii* F.v.M., (on Coree, and at 4,500 feet on Tidbinbilla), *Verbascum blattaria* L., (naturalised).

LENTIBULARIACEÆ: *Utricularia dichotoma* Labill., var. *uniflora* Benth.

PLANTAGINACEÆ: *Plantago varia* R.Br.

RUBIACEÆ: *Coprosma hirtella* Labill., (at 4,000 feet, on granite, at Booroomba, also towards the summit of Tidbinbilla), *Pomadour umbellata* Sol., *Asperula oligantha* F.v.M., also var. *scoparia* F.v.M., *Galium umbrosum* Sol.

CAPRIFOLIACEÆ: *Sambucus Gaudichaudiana* DC.

CUCURBITACEÆ: *Cucumis myriocarpus* Naud., (small melons, naturalised).

CAMPANULACEÆ: *Lobelia dentata* Cav., *L. pedunculata* R.Br., *Isotoma fluviatilis* F.v.M., *Wahlenbergia gracilis* DC.

GOODENIACEÆ: *Velleia paradoxa* R.Br., *Goodenia hederacea* Sm., *G. pinnatifida* Schlecht.

CANDOLLEACEÆ (Stylidiaceæ): *Candollea serrulata* Labill., (*Stylidium graminifolium* Sw., Trigger-Flower).

COMPOSITÆ: *Olearia megalophylla* F.v.M., (around Coree and Tidbinbilla), *O. chrysophylla* Benth., *O. argophylla* Labill., (Musk-Tree), *O. stellulata* DC., *Celmisia longifolia* Cass., (*Aster celmisia* F.v.M., Silver Daisy), *Vittadinia australis* A. Rich., *Calotis scabiosifolia* Sond. and F.v.M., var. *integrifolia*, *Lagenophora Billardieri* Cass., *Brachycome scapigera* DC., *B. scapiformis* DC., (on Coree and near Gudgenby at 4,500 feet), *B. Sieberi* DC.(!), *B. discolor* C. Stuart, *Cotula filicula* Hook., *Centipeda Cunninghamii* F.v.M., *Craspedia Richea* Cass., (Bachelors' Buttons), *Cassinia aculeata* R.Br., (at Booroomba and Coree), *C. longifolia* R.Br., (at Gudgenby), *C. quinquefaria* R.Br., *Podolepis longipedata* A. Cunn., also var. *robusta* Maiden and Betche, *P. canescens* A. Cunn. *Leptorrhynchos squamatus* Less., *Helichrysum scorpioides* Labill., *H. lucidum* Henck., and var. *viscosum*, (*H. bracteatum* Willd., "Everlasting Flower"), *H. apiculatum* DC., *H. semipapposum* DC., *H. ledifolium* Benth., *H. rosmarinifolium* Less., var. *thyrsoides* Benth., (at 5,000 feet on Bimberi), *H. Stirlingii* F.v.M., (at 4,000 feet on Bimberi), *H. baccharoides* F.v.M., *Helipterum anthemoides* DC., *H. incanum* DC., *H. dimorpholepis* Benth., *Gnaphalium japonicum* Thunb., *G. purpureum* L., *Stuartiana Muelleri* Sond., *Erechtites mixta* DC., *E. quadridentata* DC., *Senecio pectinatus* DC., *S. dryadens* Sieb., (*S. australis* A. Rich.), *Bedfordia salicina* DC., (near Mount Coree, and locally called Adam's Flannel from its tomentose, flannel-like leaves), *Cymbonotus Lawsonianus* Gaud., *Centanrea calcitrapa* L., (Star-Thistle, naturalised), *C. solstitialis* L., (naturalised), *Microseris Forsteri* Hook., (a yam, with yellow flowers), *Hypochaeris radiata* L., (Dandelion, naturalised), *Picris hieracioides* L., (naturalised), *Carduus pycnocephalus* L., (naturalised).

#### COMPARISON WITH TASMANIA.

Although the plant-associations found on the high points appear to disclose certain facts, it has to be remembered that an assemblage of plants is not only regulated by climate, but by geological formations as well. In discussing those plants noticed on Tid-

binbilla at 5,100 feet and on Bimberi at 6,200 feet, some interesting features are brought out. On Tidbinbilla, the Families with most representatives were Myrtaceæ and Leguminosæ, with four species each, while Compositæ had three species. Curiously no species whatever of Leguminosæ was noticed on the summit of Bimberi, while Myrtaceæ had three, but Compositæ had eleven.

Before conclusive deductions could be drawn from a record such as this, it would be desirable to have a more systematic examination carried out than time permitted me to make, and over a greater number of levels. It is not remarkable, however, that this limited record shows that the Compositæ, which are considered to be the largest Family among flowering plants, should be the most numerous at the higher levels, for they are known to be able to resist the cold. On the other hand, masses of a few species of Compositæ may be seen on the hot western plains of this State, in places forming the dominant vegetation.

In connection with distribution, it is of interest to make a comparison with Tasmania. There the Family Compositæ predominates, and contains more species than Leguminosæ and Myrtaceæ combined, the figures being approximately—Compositæ 110, Leguminosæ 60, and Myrtaceæ 40.\*

From the list of plants collected by me within the Federal Capital Territory, the Families, according to numbers of species, are arranged in the following sequence—Leguminosæ 43 species, Compositæ 42, and Myrtaceæ 34. These figures may be modified by further discoveries, and the first two Families may even change places.

The genera are represented in the following order: Eucalyptus (Myrtaceæ) 19 species, Acacia (Leguminosæ) 15, Juncus (Juncaceæ) 10, and Helichrysum (Compositæ) 8.

Out of 27 species noticed on the summit of Tidbinbilla, at 5,100 feet, 15 of these, or 55%, occur in Tasmania; while on Bimberi, at 6,200 feet, 22 out of 30 species, or 73%, are found in Tasmania.

---

\* "The Tasmanian Flora," by Leonard Rodway, C.M.G., (1903).

As an evidence of considerable similarity in climate, it is pointed out that, in the whole of the Federal Capital Territory, 361 native species were noticed, of which 233, or 65%, are also indigenous in Tasmania.

I wish to express my indebtedness to Mr. J. H. Maiden, F.R.S., the late Mr. E. Betche, and Mr. E. Cheel for assistance and corroboration in the identification of plants. To Mr. C. R. Scrivener, I.S.O., Director of Commonwealth Lands and Surveys, I am grateful for having afforded me the opportunity and facilities for visiting the various points within the Federal Territory: while to Messrs. Charles H. McKeachnie, of Booroomba, and Marmaduke W. Lee, of Gudgenby, my thanks are due for hospitality and personal guidance to the summit of Tidbinbilla, and the head of the Cotter River respectively; also to Mr. John Blundell for his escort to the summit of Mount Coree. I have also to thank Mr. A. J. Hare, Under Secretary for Lands, and Mr. E. B. Harkness, Under Secretary, Chief Secretary's Department, for information concerning the early records of settlement in the locality.

---

EXPLANATION OF PLATES LXXI.-LXXIV.

Plate lxxi.

*Casuarina Luehmanni* R. T. Baker; growing under shelter of bank on Molonglo River.

Plate lxxii.

*Grevillea juniperina* R. Br.; near Cotter and Murrumbidgee Rivers.

Plate lxxiii.

*Banksia marginata* Cav.; in open forest granite-country at Booroomba.

Plate lxxiv.

Swampy plain, with *Kunzea Muelleri*, *Aciphylla simplicifolia*, *Epacris paludosa*, *Juncus fulcatns*, and *Eucalyptus coriacea*; between Gudgenby and Cotter River, at about 4,500 feet level.